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JUN 14 2004

TECHNOLOGY CENTER R3700

(a) TITLE OF THE INVENTION
Universal Telescoping Bike Rack
(UNIRAK)

(b) CROSS-REFERENCE TO RELATED APPLICATIONS
App. No. 60/225/299

(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR
DEVELOPMENT. "Not Applicable"

(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT
DISC. "Not Applicable"

REFERENCE TO A "MICROFICHE APPENDIX" "Not Applicable"

(e) BACKGROUND OF THE INVENTION

(1) Field of the Invention

This invention relates to storage for bicycles and more particularly, relates to a bicycle storage rack that can be quickly and easily mounted in the cargo bed of a pickup truck or similar vehicle or optionally can be mounted on a fixed base or flat surface.

(2) Description of Related Art

Bicycle storage devices of prior art come in a variety of designs and configurations. Some are simple in design while some are more complex in design and require the removal of the front tire assembly, mounting of the rack on top of the vehicle that is used for transport. Some are as simple as using a horizontal bar with some sort of spring loaded mechanism for retention of the bicycle such as that shown in the Hurlbut U.S. Patent No. 512,548 issued Jan 9, 1894 while others may be of complex construction having alternating slots formed on a base and a longitudinal bar that passes through the spokes of the wheels such as the rack of Kennelly U.S. Patent No. 3,785,500 issued Jan 15, 1974. The latter is complicated and difficult to use because the rod is inconvenient and time consuming to remove, particularly if only a single bicycle needs to be removed from the rack.

Other examples of the variety of bicycle racks available is shown by the Hands U.S. Patent No. 5,092,504 that requires a front wheel be removed and separately stored and locked on the rack. An example of a bicycle storage device for buildings and garages of the like is shown in the Ivatt U.S. Patent No. 621,819 issued March 28, 1899. In the latter device, wheel slots are mounted on a wall with a bar mounted on the ceiling. Of course, none of these devices are convenient or suitable for carrying bicycles in the bed of a pickup truck.

Vehicle mounted carriers for bicycles and the like are shown in Bert et al U.S. Patent No. 4,852,779 issued Aug. 1, 1989; Bowman U.S. Patent No. 3,912,139 issued Oct 14, 1975 and Richard U.S. Patent No. 4,171,077. The Bowman Patent describes a cycle carrier for mounting

on the flat bed of a pickup truck. It is held in place by crossbars that clamp against opposite sidewalls of a truck cargo area. It is complicated in construction and has a channel having a hole for receiving the front wheel of a motorcycle. It is not easily removed and installed and is not convenient for carrying bicycles.

The Richard U.S. Patent No. 4,171,077 shows a bicycle rack for mounting on the rear of a vehicle. In this case, the rack is mounted on a bus and has four channels for receiving up to four bicycles. Channel members are mounted on a frame that is constructed to engage the lower edge of the bumper of a vehicle. Similar devices have been constructed for mounting a bicycle on the rear of automobiles and trucks.

Each of the bicycle storage devices or racks, designed for use on vehicles, suffer from a number of disadvantages. In some cases the front wheel must be removed, and the brakes assembly disengaged, and cables separated for the fork on the vehicle mounted on a locking arrangement with the front wheel stored separately or in a separate locking device. The configuration of the racks do not allow them to be used with commonly employed liners for truck beds without substantial alterations to the liner such as cutting holes in the liner to accept the rack. An additional disadvantage is that the attachment mechanisms for the racks are relatively complex and time consuming to use. They do not permit the racks to be easily installed and removed. In fact, many of these racks are essentially permanently mounted, limiting the use of the truck or reducing cargo carrying usefulness substantially. Some even require drilling holes in the vehicle to permanently alter the cargo area and decrease the value of the vehicle.

It is one object of the present invention to provide an elegantly simple bicycle storage rack for mounting bicycles in the cargo area of a pickup truck.

Another object of the present invention is to provide a bicycle storage rack that can be mounted or removed from the cargo area of a pickup truck and secured with only the use of extension arms with the use of internal compression springs that push against the sides of the cargo area of the bed of the truck.

Yet another object of the present invention is to provide a bicycle storage mounting rack that can be quickly and easily removed and stored in the cab of a truck, or remounted on a stationary platform.

Yet another object of the present invention is to provide an elegantly simple bicycle storage rack that can be installed and removed without any special tools.

Another object of the present invention is to provide an elegantly simple bicycle storage rack that utilizes the cargo area of a pickup truck to provide upright support of the bicycle (s) minimizing and simplifying the construction of the rack.

Another object of the present invention is to provide and elegantly simple bicycle storage rack that can be easily set-up, and does not require the disassembly of the bicycle for storage.

Another object of the present invention is to provide a bicycle storage rack that takes advantage of the existing cargo area configuration to permit use without modification of cargo bed liners.

Still another object of the present invention is to provide an elegantly simple bicycle storage rack which will permit numerous bicycles to be stored in alternate arrangements to permit maximum numbers of bicycles to be stored and transported.

Yet another object of the present invention is to provide an elegantly simple bicycle storage rack that when removed, can be used as a free standing rack.

Another object of the present invention is to provide a bicycle storage rack and a simple locking device that deters theft of bicycles mounted in the rack.

(f) BRIEF SUMMARY OF THE INVENTION

The purpose of the present invention is to provide an elegantly simple bicycle storage rack that is easily and quickly mounted and removed from the cargo area of a pickup truck for storage and transportation of bicycles.

The bicycle storage rack is elegantly simple in construction and is comprised of a square tubular base and a plurality of upright cold rolled steel rods for support. The pluralities of upright cold rolled steel rods provide slots for receiving the front or rear wheels of a bicycle. The upright cold rolled steel rods are formed in pairs separated conveniently to accept the front or rear wheels of a bicycle. Preferably, the uprights are spaced to easily accept a bicycle wheel without the removal of any parts.

The lower square tubular steel base is designed to seat in the forward or rearward position in the cargo area of a pickup truck bed. The storage rack is centered between the sides of the cargo area then the threaded T-Bolts are released and the inner extension arms under compression spring tension are released to seat against the sides of the cargo area bed. No special tools are required for the installation or removal of the bicycle rack. There is no special support needed to provide a secure anchor for the bicycle rack in the cargo area of the pickup truck bed.

A unique retention device is used to keep the bicycles from rolling out of the upright cold rolled steel rods in plurality. A spring loaded J-hook assembly is pulled to the rear and seated around the rim of the bicycle.

The elegantly simple bicycle storage rack is installed in the forward or rearward position of the cargo area of the pickup bed. The bicycle rack is secured by releasing the threaded T-Bolts on either end of the bicycle rack and allowing the extension of the inner arms under compression spring tension to seat against the sides of the cargo area of pickup bed. The bicycle storage rack

may be easily and quickly set up to transport one or more bicycles mounted and secured by the J-Hook assembly. The bicycle storage rack is easily removed simply by loosening the threaded T-Bolts and relieving the tension on the inner arms, collapsing the inner arms inside the main square tubular steel base, then retightening the T-Bolts to restrain the inner arms from extension from the main square tubular steel base. To mount on a stationary base, locate the desired area and place the bicycle storage rack on flat surface.

The above and other novel features of the invention will be more fully understood from the following detailed description and the accompanying drawings, in which:

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Fig. 1 is a perspective view of an elegantly simple bicycle storage rack constructed according to the invention when mounting on a stationary platform.

Fig. 2 is a top view of the bicycle rack mounted in the cargo area of a pickup truck.

Fig. 3 is a side elevation view of the bicycle storage rack mounted in the bed of a pickup truck as shown in Fig. 2.

Fig. 4 is a perspective view illustrating two bicycles mounted in the bicycle storage rack in the cargo area of a pickup truck.

Fig. 5 is a frontal view of the bicycle storage rack in its entirety.

Fig. 6 is a top view of the bicycle storage rack showing the even spacing of the cold rolled steel uprights in plurality, and the added cold rolled steel bracing between the uprights in plurality.

Fig. 7 is a perspective view of the inner extension arm, for use inside the square tubular steel base.

Fig. 8 is a perspective view of the inner extension arm and of the foot pad for use inside the square tubular steel base.

Fig. 9 is a perspective side view of the foot pad

Fig. 10 is a perspective front view of the foot pad

Fig. 11 is a perspective front view of the rubber padding on the foot pad.

Fig. 12 is a perspective end view of the foot pad

Fig. 13 is a perspective end view of the bicycle storage rack in its entirety, with the perspective J-Hook bracket and spring loaded J-Hook assembly attached, and the inner extension arm removed for clarity.

Fig. 14 is a perspective front and side view of the J-Hook bracket assembly.

Fig. 15 is a perspective view of the J-Hook assembly and the parts required for the construction of the retention device.

Fig. 16 is a perspective view of the bicycle storage rack showing the inner extension arms, inner compression springs, vertical cold rolled steel rods in plurality, threaded T-Bolts, J-Hook assemblies, J-Hook brackets in plurality.

(h) DETAILED DESCRIPTION OF THE INVENTION

A bicycle rack for use in a stationary platform or mounted in the back or cargo area of a pickup truck is illustrated in FIGS 1 and 2. In FIG. 1 the rack is shown constructed for use on a stationary back; while in FIG. 2, the bicycle rack is illustrated mounted in the cargo area of a pickup truck bottom 5.

A bicycle rack 30 constructed according to the invention is shown in FIG. 1 and is comprised of a square tubular steel base member 10, a plurality of cold rolled steel rods 18, and a plurality of cold rolled steel rods 17 to form bracing in between 18 in plurality. Preferably, upright cold rolled steel rods provide slots at 18 that has a width indicated in FIG. 6 to accept the front or rear wheels of a bicycle. Preferably, the spacing is such that the wheels with or without fenders, will fit into slot. Cold rolled steel is in measurement size of 5/16".

The bicycle storage rack 30 as shown in FIG. 1 can be mounted either in the cargo area of a pickup truck bottom 5 FIGS. 2, 3 and 4. or used as a free standing rack on any flat surface.

Bicycle storage rack 30 requires no hardware for the installation in the cargo area of a pickup truck bottom 5.

A unique locking mechanism for mounting bicycles in bicycle storage rack 30 is provided by J-Hook assembly 14 FIG. 15 passing through holes in provided J-Hook brackets 15. J-Hook assemblies are constructed to engage the bicycle tire rim to securely hold a bicycle in rack 30. A specially designed spring loaded hook assembly 14 is provided to secure the bicycle in the rack 30 and will be described in greater detail hereinafter.

FIG. 2 illustrates bicycle storage rack 30 mounted in the cargo area of a pickup truck bottom 5. This can be easily and quickly accomplished by simply lifting bicycle storage rack 30 from flat surface and seating the bicycle storage rack 30 in either the forward or rearward position of the cargo area of the pickup truck 5. Bicycle storage rack 30 is then secured by releasing the threaded T-Bolts on either end of the bicycle storage rack 30 and allowing the inner extension arms to extend under compression spring tension and press against the side walls of

cargo area of pickup truck 5. There are no other means of securing the bicycle storage rack 30 in the cargo area of the pickup truck bottom 5.

Bicycle 34 is mounted in bicycle storage rack 30 as illustrated in FIGS. 3 and 4. Front wheel 32 is inserted in slot between cold rolled steel upright supports 18 in plurality at said space illustrated in FIG. 6. When front wheel 32 or rear wheel 33 are inserted into upright rods 18 J-Hook assembly 14 are pulled to the rear and turned to be secured around the wheel 32 or 33. Bicycle 34 is then secure and will not roll out of the upright rods 18.

The secure position of bicycle storage rack 30 and bicycle 34 when mounted and secured by J-Hook assembly 14 is shown more clearly in FIGS. 3 and 4. When bicycle storage rack 30 is mounted in the forward position of the cargo area of pickup truck bottom 5, wheel 32 of bicycle 34, abuts rear of truck cab 35, and front of cargo area 36. The bicycle's storage rack illustrated holds four bicycles. Different configurations can be accommodated depending on size of vehicle the application is intended for.

It should be apparent that the bicycle storage rack 30 can be mounted in the rear of the cargo area of a pickup truck bottom 5, whereas the front wheel 32 or the rear wheel 33 will abut against the rear of the cargo area 37.

The specifically designed and constructed J-Hook assembly 14 is shown in greater detail in FIG.15.

J-Hook assembly 14 has its own compression spring in size 24 that secures it around the wheel 32, 33. The compression spring is held on the shaft of the J-Hook assembly 14 with two 5/16" X 3/4" flat washers, which are held in place after two 1/8" holes are drilled through the J-Hook assembly 14 @ 2.5" apart with 1/8" cotter pins.

Once the bicycle front wheel 32, or rear wheel 33, is positioned into the space between upright cold rolled steel rods 18 and the J-Hook assembly 14 is secured around the front wheel 32, or rear wheel 33, there is no need for any other device to secure the bicycle 34 into the bicycle storage rack 30.

Thus there has been disclosed a unique, novel and elegantly simple bicycle storage rack for mounting in the cargo areas of pickup trucks. The bicycle can be quickly and easily installed and equally, quickly and easily removed when the cargo area is needed for other purposes. Further, when not in use, the bicycle storage rack is easily stored in the cab of the truck or may be mounted on a flat surface.

This invention is not to be limited by the embodiment shown in the drawings and described in the description which is given by way of example and not of limitation, but only in accordance with the scope of the appended claims.